

Experiences With An
OpenVault,
A Prototype Implementation of a
Standard

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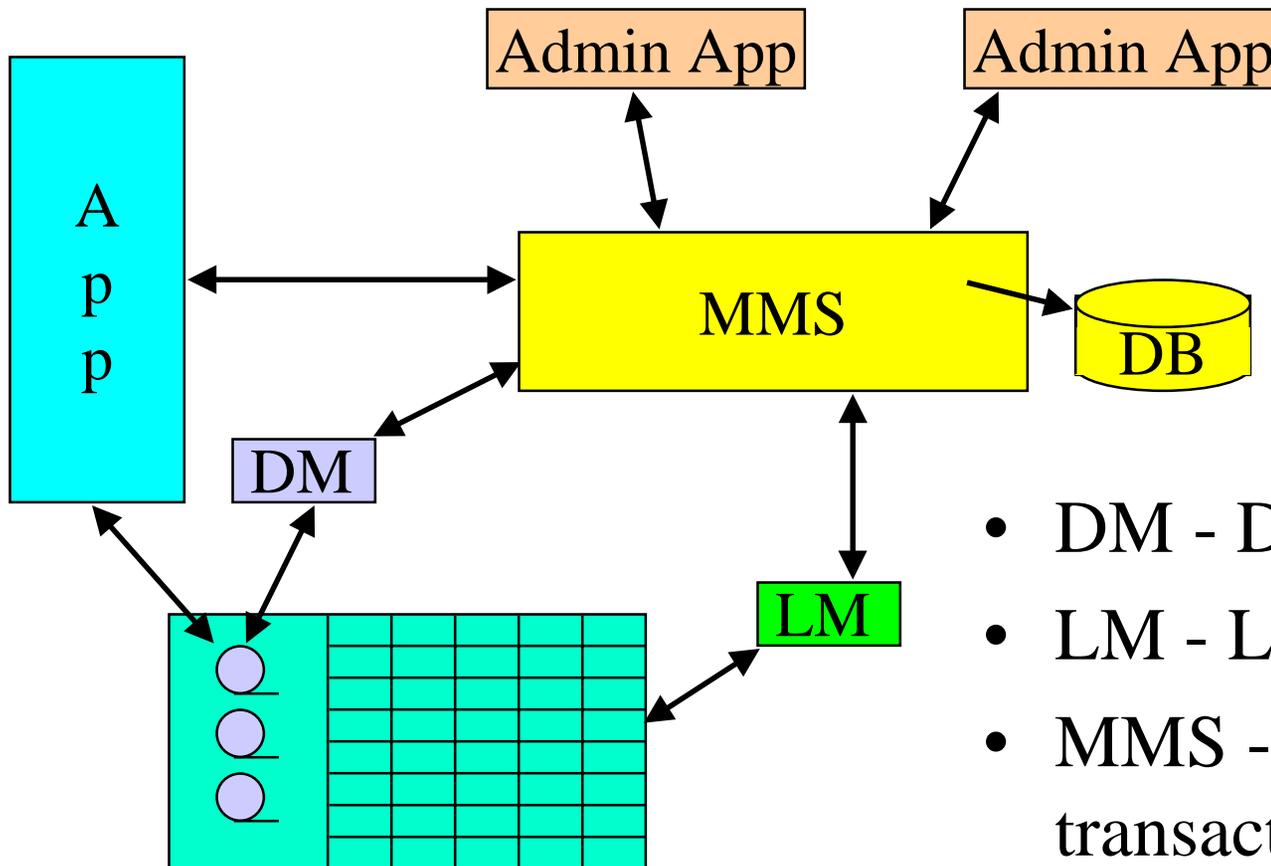
Goals of the Project

- Share libraries and drives between applications.
- Separate device dependent from device independent code.
- Allow run-time addition of new components.
- Portable and open standard all can use.

Interfaces Not Objects

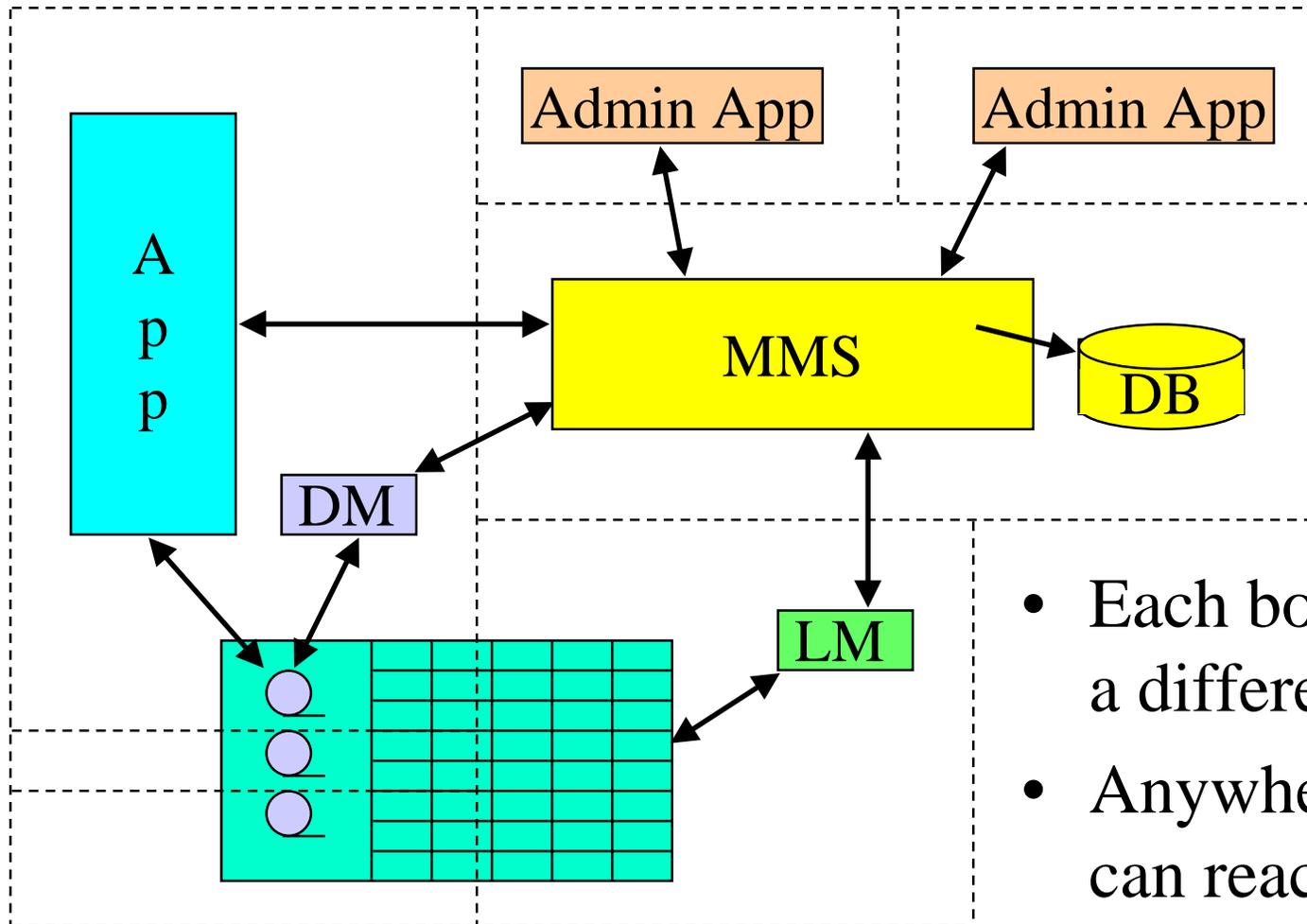
- Define the interfaces between objects not the objects themselves.
- Implementation freedom for each object.
- Uses lowest common denominator in IPC: simple strings in the UTF-8 international character set via TCP/IP socket.
- Testable protocol definitions.

Overall Architecture



- DM - Drive Mgr.
- LM - Library Mgr.
- MMS - Core and transaction log.

Distributed Architecture

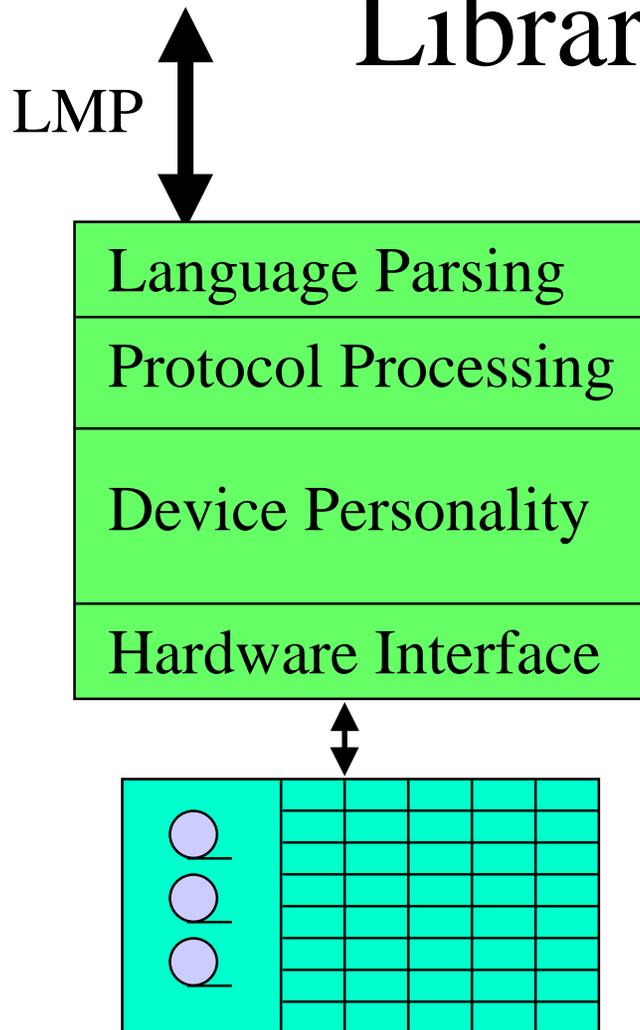


- Each box can be a different host.
- Anywhere TCP can reach.

Application Interface

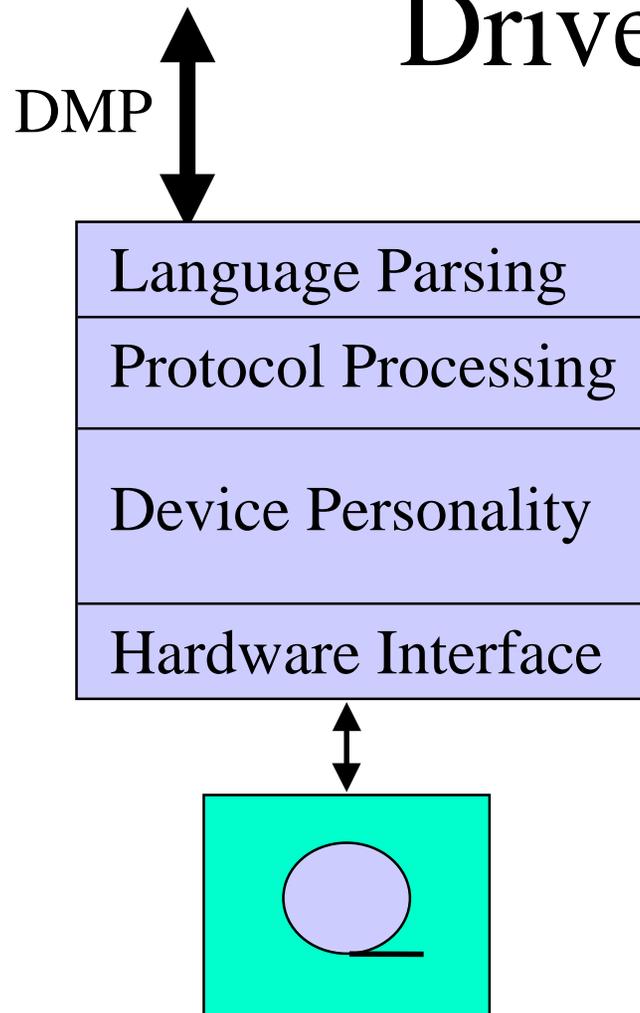
- Called “MMP”: a constraint-based declarative language.
- App expresses to MMS what characteristics are important to it and the MMS figures out how to satisfy the app’s needs.
- Considerable power for the application plus flexibility for the MMS.
- Privileged superset defined for admin apps.

Library Managers



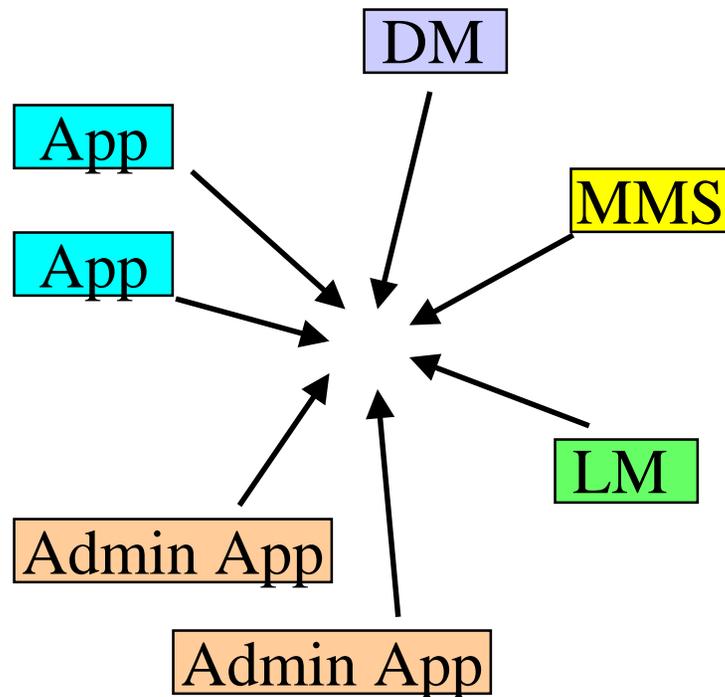
- Encapsulates all unique features of library.
- Advertises contents of library and performs actions for the MMS.
- Separately testable.

Drive Managers



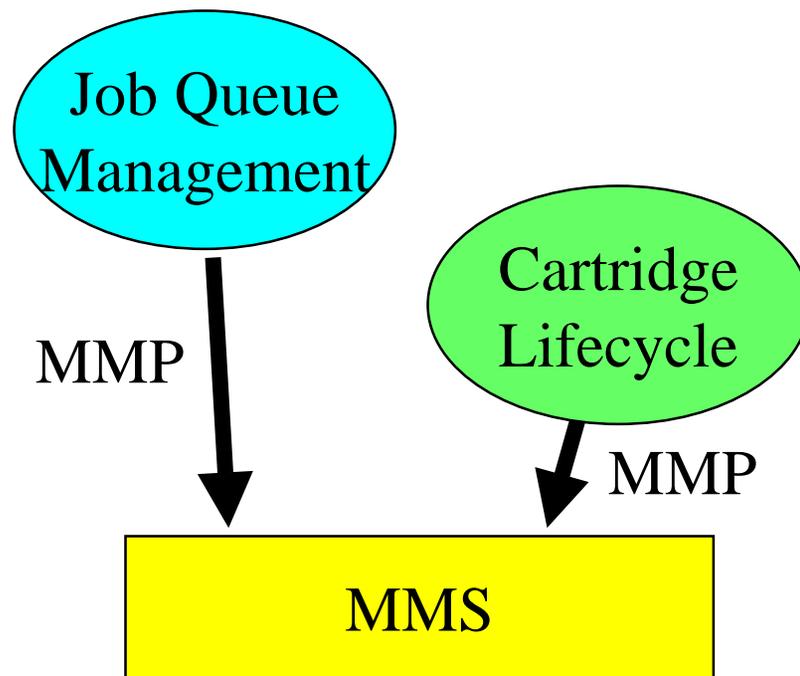
- Encapsulates all unique features of drive, OS, and platform.
- Advertises capabilities of drive/OS combo and performs actions for the MMS.
- Separately testable.

Plug and Play Storage Components



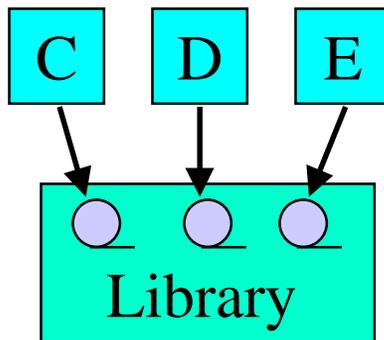
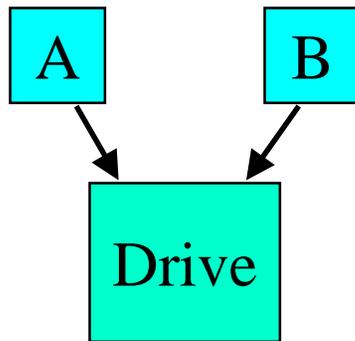
- Any application can be used with any library.
- Add apps or hardware transparently.
- 3rd-party sources for everything.

External Policy Agents



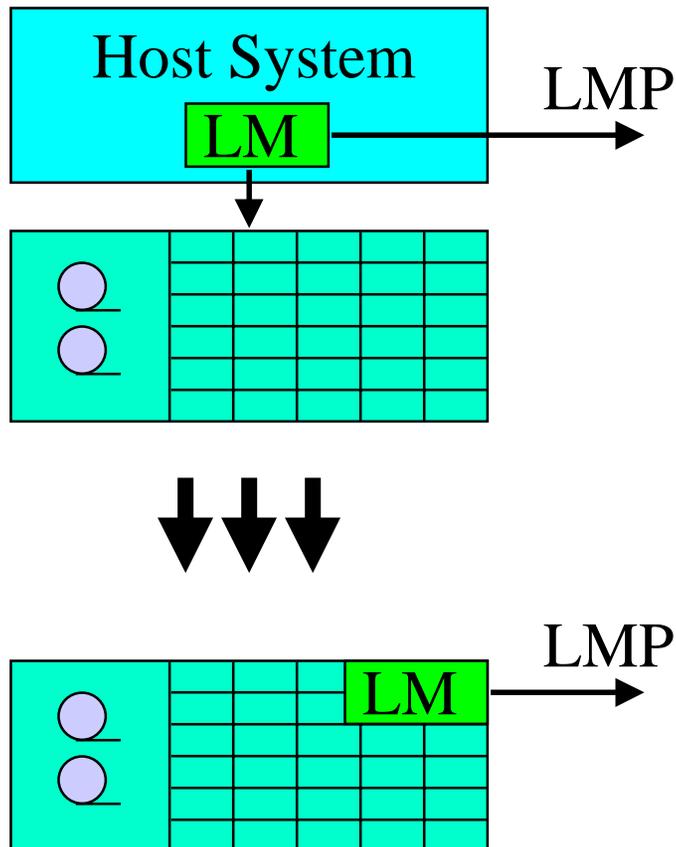
- Site specific policies.
- Optimizers and resource managers.
- Site specific system monitoring.

Interesting Topologies



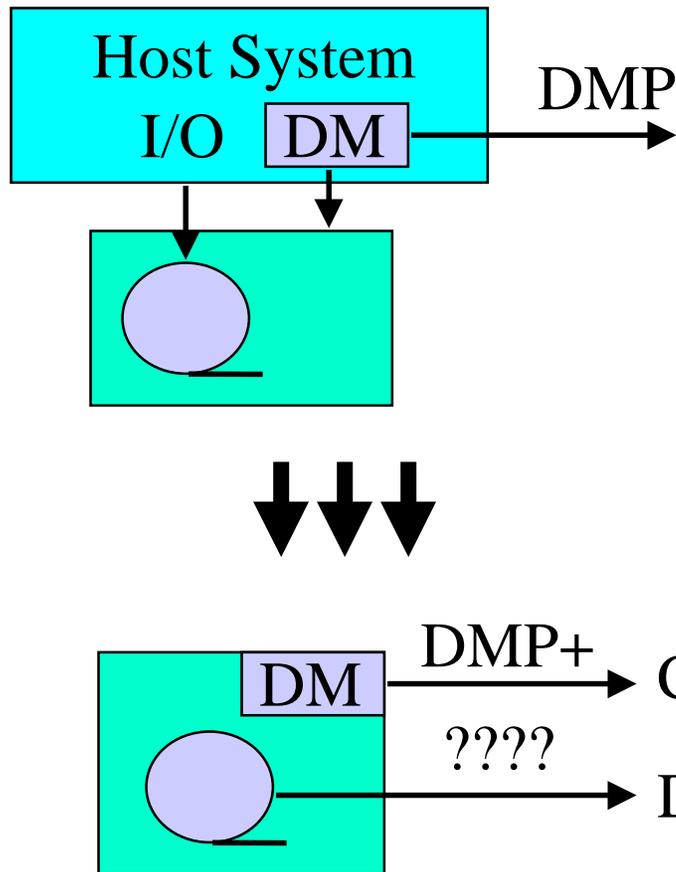
- Multi-ported of drives with on demand access from either host.
- Star configurations allow the wide sharing possible only with very big libraries in the past.

Network Attached Storage



- Build the Library Manager into libraries.
- Highly available:
 - Not dependent on platform stability.
 - Network routing for continuous access.
- Insulated from platform changes.

Network Attached Storage



- Build the Drive Manager into drives?
- DMP handles control path only, need a data path protocol too.
- NASD and SNIA.

Status of the Project

- Working code moving into real world trials.
- SSSWG has started to write the interface standards documents.
- SSSWG expects to go to ballot in late 1998.
- Participate! www.ssswg.org
- See the Silicon Graphics vendor booth for a demo.